(10) In conclusion, I venture to make a simple suggestion. Why should each region be photographed on a different plate? It would strengthen the determination of systematic errors immensely if several regions were photographed on the same plate without disturbing the telescope very seriously, or the plate in its holder at all. The stars of different regions might be identified by making the displacements from the 6^m to the 3^m exposure in different directions, or of different magnitudes, and the cases where stars of one region interfered with those of another would be rare. To have more stars on one plate would make it easier to measure, and there would be economy in many ways—of time in changing plates and developing, and of expense in actual plates and reproduction if any. We are trying this method at Oxford to see how it works.

Note on Professor Turner's Paper on the Systematic Errors of Measures of Photographic Plates. By W. H. M. Christie, M.A., F.R.S., and F. W. Dyson, M.A.

Professor Turner points out that the systematic difference in the value of the constant a on the two halves of the photographic plates taken at the Royal Observatory, referred to in a paper in the *Monthly Notices* for January, may be due to a tilt of the

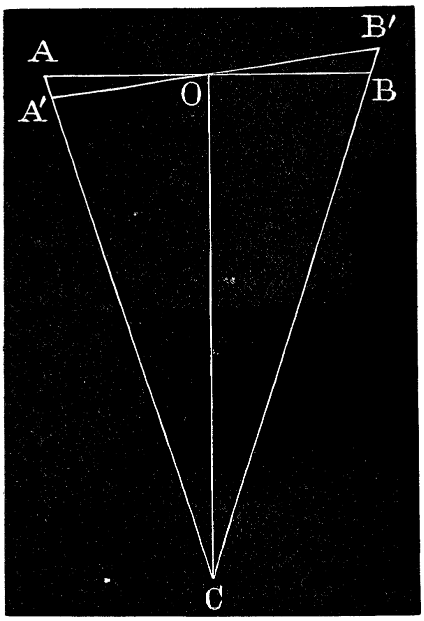

plate. It is easily seen geometrically that a tilt would have this effect. In the diagram O is the centre of a plate, C the centre

of the object-glass, and A B : A′ B′ are the positions of two stars on plates without and with a tilt.

Let the tilt, AOA′ = i, and let

$$\angle \text{ACO} = \angle \text{BCO} = \alpha.$$

If the tilt be uncorrected for, there will be an apparent scale correction of

$$\frac{\text{OA}}{\text{OA}'} - 1$$

for the star A′, and of

$$\frac{\text{OB}}{\text{OB}'} - 1$$

for the star B′.

Now

$$\left.\begin{aligned} \frac{\text{OA}}{\text{OA}'} - 1 &= \frac{\cos(\alpha - i)}{\cos\alpha} - 1 = +\sin i \tan\alpha \\ \frac{\text{OB}}{\text{OB}'} - 1 &= \frac{\cos(\alpha + i)}{\cos\alpha} - 1 = -\sin i \tan\alpha \end{aligned}\right\}$$

and

The difference of these is $2 \sin i \tan \alpha$, and if α be taken as 30′, this = ·0174 sin i. Equating this to ·00010, the value of the discordance found on the Greenwich plates, we find that $i = 20'$.

It seemed almost impossible that there should have been any error of this magnitude, and reference to the adjustment book showed that previous to 1894 September 10 the tilt was about 5′. On 1894 September 17 the tilt was readjusted by Mr. Criswick and reduced to between 1′ and 2′. The tilt was found to be the same on 1896 March 5, when it was measured by Mr. Dyson and Mr. Hollis.

An independent proof that the discordance in question is not caused by tilt is furnished by Professor Turner's criterion, that if it were there would be a discordance in e of the same sign and half the amount of the discordance in a. Comparison of the following figures shows that this is not the case.

The following table is a copy of that on p. 126 of the paper in the January number of the *Monthly Notices* above referred to, with the corresponding values of e added for comparison with those of a:—

Zone. °	Nos. of Plates.	Difference of a	Means.	Difference of e.	Means.
65	1274–534	+·00023	+·00026	+·00013	−·00007
	534–426	+·00036		−·00014	
	426–2270	+·00032		−·00033	
	2280–535	+·00013		+·00006	
66	443–444	+·00026	+·00019	+·00019	−·00005
		+·00034		+·00028	
	444–1236	+·00015		−·00024	
	1236–2290	+·00007		−·00018	
	2290–2238	+·00037		−·00028	
	2279–2308	+·00007		−·00006	
67	2288–2289	+·00012	+ 00019	+·00002	+·00001
	2289–2251	+·00024		+·00005	
	2251–1416	+·00020		−·00005	
68	2136–2227	+·00039	+·00029	+·00058	+·00010
	2227–1397	+·00023		+·00021	
		+·00013		+·00001	
	1397–2306	+·00006		−·00016	
		+·00024		+·00002	
	2057–2058	+·00045		−·00006	
69	1323–2291	+·00004	+·00004	−·00002	−·00002

The plates whose numbers are less than 2227 were taken before the alteration in the adjustment for tilt on 1894 September 17. Examination of the figures in the above table shows that this did not sensibly alter the value of the discordance in question.

A Graphical Method of Solving Kepler's Equation.
By H. C. Plummer.

(*Communicated by H. H. Turner.*)

The prominence which Dr. T. J. J. See in a recent paper published in the *Monthly Notices* gave to the Waterston-Dubois method of solving Kepler's Equation makes it appear likely that another graphical method may have some interest. The question of authorship to which that paper gave rise causes hesitation in claiming originality; but the method which is here described has not, so far as I am aware, been published previously. It is proposed to show a way of finding an approximate solution of the